AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-3. (canceled)

4. (currently amended) ~~Process~~ A process for determining the mechanical resistance of a bone from a digitized two dimensional image, obtained by imaging, characterized in that ~~there~~ a correlation is carried out ~~a correlation~~ between ~~the~~ a bone mineral density determined from ~~this~~ the two dimensional image by any means suitable to this type of image and a structural parameter α, the structural parameter α obtained from the same two dimensional image, wherein ~~there is determined~~ the structural parameter α is ~~obtained~~ determined by ~~the~~ a series of the following steps:

a) choosing a point at random at a pixel of the two dimensional image, ~~which is at the~~ wherein the pixel has a gray level h(O)[[,]];

b) choosing a straight line starting from ~~this~~ the point and having a direction also determined at random[[,]];

c) moving a distance r along this straight line to a new point, h(r) being the gray level of ~~this~~ the new point[[,]];

d) computing the variance of the gray levels with the formula: $V(r) = [h(r) - h(O)]^2$[[,]];

e) tracing the curve associated with V(r) on a log-log scale[[,]]; and

f) determining the slope of this log-log curve ~~which represents~~ to represent said parameter α.

5. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 4, ~~characterized in that~~ wherein steps a) to d) are repeated a number of times sufficiently great to make the mean variance function V(r) converge over ~~the~~ an assembly of the repetitions.

6. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 4, ~~characterized in that~~ wherein ~~there is carried out a~~ the correlation between the bone mineral density obtained from ~~this~~ the two dimensional image and said parameter α is evaluated from the ~~same~~ two dimensional image according to ~~the~~ a mathematical model:

$$C_u' = b_0 + b_1 * \exp(b_2 * DMO) * \alpha$$

wherein b_0, b_1, b_2 are coefficients obtained by nonlinear regression and C_u' is the prediction of the ultimate stress C_u of the bone.

7. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 4, ~~characterized in that there is~~ further comprising: ~~determined~~

determining a correlation between the parameter α and a three dimensional parameter of the trabecular network of the bone.

8. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 7, ~~characterized in that~~ wherein the three dimensional parameter of the trabecular network of the bone is the connectivity density χ_v

9. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 5, ~~characterized in that~~ wherein ~~there is carried out a~~ the correlation between the bone mineral density obtained from ~~this~~ the two dimensional image and said parameter α is evaluated from the ~~same~~ two dimensional image according to ~~the~~ a mathematical model:

$$C_u' = b_0 + b_1 * \exp (b_2 * DMO) * \alpha$$

wherein b_0, b_1, b_2 are coefficients obtained by nonlinear regression and C_u' is the prediction of the ultimate stress C_u of the bone.

10. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 5, ~~characterized in that there is determined~~ further comprising:

determining a correlation between the parameter α and a three dimensional parameter of the trabecular network of the bone.

11. (currently amended) ~~Process~~ The process for determining the mechanical resistance of a bone according to claim 6, ~~characterized in that there is determined~~ further comprsing:

determining a correlation between the parameter α and a three dimensional parameter of the trabecular network of the bone.

12-13. (canceled)